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H Y D R O L O G I C A L M E M O R A N D A No. 8.

Rainfall over the catchment areas of the Northumberland and Tyneside, and the Wear and Tees River Boards, 1916-1950.

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G.12271/JB/2/63/75.

HYDROLOGICAL MEMORANDA NO. 8

Rainfall over the catchment areas of the Northumberland and Tyneside, and the Wear and Lees River Boards, 1916-1950.

1. Rainfall Averages, 1916-1950

1.1. Introduction. The determination of standard-period averages, for the months and for the year, is carried out in three stages:- the selection of sound, homogeneous records, complete for the 35 years, 1916-1950, which provide arithmetic means of monthly and annual rainfall, - the basic values for all other work; the estimation of standard-period, annual averages for stations with incomplete data; the estimation of standard-period, monthly averages for stations in the second group, where these are needed for special purposes.

A detailed account of the methods developed and used in the Meteorological Office, (M.O.3), to estimate standard-period averages from short-period records, is given in Hydrological Memoranda No. 5. It is of interest to note that the area of the Wear and Tees River Board was chosen for our first trial in the estimation of averages for short-period stations by the methods later explained in Hydrological Memoranda No. 5 and thereafter used for all other areas of Great Britain and Northern Ireland.

The maps and tables are presented in the simplest, most precise forms in order to be of use to a wide range of enquirers.

1.2. The Primary Survey of stations with complete records during 1916-1950, included some cases where small breaks in a long record were filled by introducing estimated values, based on a nearby station, with or without the use of a modifying factor.

Of the many records examined, monthly and annual averages were accepted for 17 stations in the Northumberland and Tyneside River Board area and for 17 stations in the Wear and Tees catchment. The accepted values (in inches), together with the proportions (per cent) of each monthly average to the annual average, are given in Table I together with the altitude and the National Grid Reference for each station. Most of these averages were included in H.M.S.O. publication, M.O. 635, "Averages of Rainfall for Great Britain and Northern Ireland, 1916-1950" but those marked with an asterisk (*) were omitted because other stations were so near.

The percentage proportions of the monthly averages to the annual averages for the long-period stations were used to draw a series of twelve monthly maps from which it is possible to estimate the percentage of annual average rainfall for each month of the year. These are shown on one sheet as Figure 1. Values estimated for a few points between the isopercental lines have been added to give a more precise indication of the variations from place to place. The points chosen are not necessarily the same for each monthly map.

/1.3.

1.3 The Secondary Survey of short-period stations was undertaken next, using records up to and including 1956 for the Wear and Tees and 1957 for Northumberland and Tyneside. The long-period stations whose records had been rejected because they were not homogeneous were also included and averages were estimated for the latter, (and improved) part of the series of observations. Averages based on less than 5 years data were not usually accepted for publication. A list of these accepted averages for short-period stations is given in Table II, together with the altitude and National Grid Reference for each station. The stations are listed in an order based on natural drainage areas which will be used for the first time in British Rainfall 1961.

These averages, together with the long-period averages listed in Table I were plotted on Ordnance Survey maps (scale 4 miles to the inch) and used to draw the lines of average annual rainfall 1916-1950. The map is shown as Figure 2.

1.4. Monthly averages for a further group of stations were next estimated for use in the Monthly Weather Report and for enquiries. For this purpose some stations were chosen from those listed in Table II to supplement those in Table I. To find the monthly averages, the monthly proportions (per cent of annual average) were chosen from the equipercental maps (Figure 1) so that the total for the twelve months was 100. These values were then used to apportion the annual average (in inches), amongst the months. The results are given in Table III.

1.5. Daily averages of rainfall. Four of the initial 34 records which were accepted in the Primary Survey (1.2) were analysed further. These records had regular daily entries for the 24-hour period, 0900-0900, for each of the 35 years, 1916-1950. Table IVa gives the 35-year totals for each day of the year (in inches). Table IVb gives 1/35 of all possible totals from .17 inch to 24.67 inches thus providing a reduction table for the values in IVa to give mean daily falls from "trace" to .70 inch.

2. Frequencies of daily rainfall. The same set of daily values used for Table IVa were regrouped as frequency tables at intervals of .01 inch. These have been re-arranged in Table V in a wider grouping with intervals of .10 inch up to 2.50 inches and thereafter at .50 inch intervals.

3. Extremes of rainfall. The records for 1916-1950 for the four stations mentioned in 1.5 and 2 have also been used to find maximum and minimum values for the year and for each month are also maximum daily values for each month. These maxima and minima are shown in Tables VI and VII. Further extracts are given to cover the 50-year period 1911-1960.

Appendix

Intense falls. All falls of 2 hours or less which rank as "noteworthy", "remarkable" or "very rare" are listed as Appendix I.

Meteorological Office, M.O.3,
February, 1963.

E. H. POWSELL

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TABLE I. Monthly and Annual Averages of Rainfall 1916-1950
(Northumberland and Tyneside River Board Area)

County	Name	Alt. ft.	N.G.R.	Jan	Feb	Mar	Apr	May	June	Jly	Aug	Sep	Oct	Nov	Dec	Year	
Northumberland	Lilburn Tower	250	NU(46)025244	2.91	2.21	2.14	1.95	2.09	1.99	2.99	3.15	2.52	3.16	3.16	2.73	31.00	Inch
				9.4	7.1	6.9	6.3	6.7	6.4	9.7	10.2	8.1	10.2	10.2	8.8	100.0	%
"	Howick Hall Gardens	110	NU(46)246188	2.72	1.87	1.80	1.92	2.07	1.92	3.01	3.15	2.66	2.98	2.81	2.65	29.56	Inch
				9.2	6.3	6.1	6.5	7.0	6.5	10.0	10.6	9.0	10.1	9.5	9.0	100.0	%
"	Cockle Park	325	NZ(45)200912	2.80	1.90	1.82	1.93	2.20	1.79	2.87	3.01	2.45	2.69	2.76	2.51	28.73	Inch
				9.8	6.6	6.3	6.7	7.7	6.2	10.0	10.5	8.5	9.4	9.6	8.7	100.0	%
"	Font Reservoir	620	NZ(45)048934	3.27	2.20	2.23	2.17	2.41	2.10	2.99	3.36	2.88	3.24	3.19	2.88	32.92	Inch
				9.9	6.7	6.8	6.6	7.3	6.4	9.1	10.2	8.7	9.8	9.7	8.8	100.0	%
"	* Gt. Whittington	528	NZ(45)007703	2.63	1.97	1.84	1.76	1.97	2.03	2.97	3.16	2.49	2.75	2.62	2.38	28.57	Inch
				9.2	6.9	6.4	6.2	6.9	7.1	10.4	11.1	8.7	9.6	9.2	8.3	100.0	%
"	* Burnside	419	NZ(45)047714	2.50	1.84	1.72	1.73	1.98	2.02	2.91	3.19	2.46	2.68	2.60	2.31	27.97	Inch
				8.9	6.6	6.2	6.2	7.1	7.2	10.4	11.4	8.8	9.6	9.3	8.3	100.0	%
"	Catclough	819	NT(36)748032	4.87	3.38	3.09	2.71	2.84	2.61	3.90	4.29	3.51	4.60	4.34	4.01	44.15	Inch
				11.0	7.7	7.0	6.2	6.4	5.9	8.8	9.7	8.0	10.4	9.8	9.1	100.0	%
"	* Canphill	650	NY(35)928777	3.11	2.19	1.94	1.87	2.13	2.04	3.02	3.36	2.82	3.04	2.91	2.60	31.03	Inch
				10.0	7.1	6.2	6.0	6.9	6.6	9.7	10.8	9.1	9.8	9.4	8.4	100.0	%
"	Fawcett	537	NY(35)968767	2.87	2.00	1.83	1.70	1.98	1.99	2.94	3.25	2.62	2.89	2.80	2.53	29.04	Inch
				9.8	6.8	6.2	5.8	6.7	6.8	10.0	11.1	8.9	9.8	9.5	8.6	100.0	%

TABLE I. Monthly and Annual Averages of Rainfall 1916-1950
(Northumberland and Tyneside River Board Area) (continued)

County	Name	Alt. ft.	N.G.R.	Jan	Feb	Mar	Apr	May	June	Jly	Aug	Sep	Oct	Nov	Dec	Year	
Northumberland	* Hallington Reservoir	470	NY(35)973761	2.74	2.01	1.85	1.80	2.03	1.96	2.93	3.23	2.56	2.86	2.76	2.45	29.18	Inch
				9.4	6.9	6.3	6.2	6.9	6.7	10.0	11.1	8.8	9.8	9.5	8.4	100.0	%
"	* Hallington Village	467	NY(35)978761	2.86	2.05	1.91	1.81	2.02	1.99	2.92	3.21	2.57	2.91	2.85	2.54	29.64	Inch
				9.7	6.9	6.4	6.1	6.8	6.7	9.9	10.8	8.7	9.8	9.6	8.6	100.0	%
"	* Cheviott	576	NY(35)987768	2.79	1.97	1.80	1.70	1.98	1.92	2.84	3.16	2.56	2.89	2.79	2.42	28.82	Inch
				9.7	6.8	6.2	5.9	6.9	6.7	9.8	11.0	8.9	10.0	9.7	8.4	100.0	%
"	* Whittle Dean Reservoir	380	NZ(45)065679	2.43	1.81	1.69	1.75	2.04	2.04	3.00	3.20	2.43	2.63	2.52	2.23	27.78	Inch
				8.8	6.5	6.1	6.3	7.3	7.3	10.8	11.6	8.7	9.5	9.1	8.0	100.0	%
"	Whittle Dean Filters	353	NZ(45)076673	2.45	1.87	1.72	1.76	2.03	2.04	3.04	3.18	2.40	2.61	2.56	2.25	27.91	Inch
				8.8	6.7	6.2	6.3	7.3	7.3	10.9	11.4	8.6	9.3	9.2	8.0	100.0	%
"	Newcastle, Leazes Park	255	NZ(45)240647	2.51	1.76	1.66	1.75	2.09	1.99	2.85	3.08	2.34	2.59	2.61	2.46	27.69	Inch
				9.1	6.4	6.0	6.3	7.5	7.2	10.3	11.1	8.4	9.4	9.4	8.9	100.0	%
Durham	Cleadon Pumping Station.	216	NZ(45)386634	2.26	1.57	1.47	1.49	1.95	1.69	2.67	2.80	2.21	2.34	2.44	2.22	25.11	Inch
				9.0	6.3	5.9	5.9	7.8	6.7	10.6	11.2	8.8	9.3	9.7	8.8	100.0	%
Northumberland	Tynemouth, Tyne Pier	54	NZ(45)371692	2.27	1.60	1.49	1.59	1.94	1.70	2.90	2.95	2.25	2.42	2.44	2.32	25.87	Inch
				8.8	6.2	5.8	6.1	7.5	6.6	11.2	11.4	8.7	9.3	9.4	9.0	100.0	%

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TABLE I. Monthly and Annual Averages of Rainfall 1916-1950

(Wear and Tees River Board Area)

County	Station	Alt. Ft.	NGR	Jan	Feb	Mar	Apr	May	June	Jly	Aug	Sep	Oct	Nov	Dec	Year	
Durham	Tunstall Reservoir	724	NZ(45)063407	3.36	2.59	2.30	2.32	2.42	2.08	3.05	3.51	2.96	3.38	3.46	3.04	34.46	Inch
				9.8	7.5	6.7	6.7	7.0	6.0	8.9	10.2	8.6	9.8	10.0	8.8	100.0	%
"	* Ushaw College	594	NZ(45)219436	2.67	2.07	1.95	1.88	2.22	1.89	2.89	2.87	2.61	2.72	2.90	2.53	29.20	Inch
				9.2	7.1	6.7	6.4	7.6	6.5	9.9	9.8	8.9	9.3	9.9	8.7	100.0	%
"	Durham	336	NZ(45)264416	2.32	1.78	1.64	1.70	2.02	1.80	2.79	2.71	2.37	2.41	2.49	2.28	26.31	Inch
				8.8	6.8	6.2	6.5	7.7	6.8	10.6	10.3	9.0	9.1	9.5	8.7	100.0	%
"	Dalton Pumping Station.	345	NZ(45)409471	2.39	1.64	1.65	1.78	2.18	2.03	2.92	3.00	2.47	2.70	2.72	2.41	27.89	Inch
				8.6	5.9	5.9	6.4	7.8	7.3	10.5	10.8	8.8	9.7	9.7	8.6	100.0	%
"	* Hart Reservoir	172	NZ(45)483343	2.04	1.41	1.29	1.48	1.79	1.67	2.47	2.46	2.04	2.15	2.28	1.85	22.93	Inch
				8.9	6.1	5.6	6.5	7.8	7.3	10.8	10.7	8.9	9.4	9.9	8.1	100.0	%
Yorkshire	* Selset	1080	NY(35)918217	4.70	3.54	2.68	2.76	2.55	2.44	3.10	3.78	3.80	4.48	4.29	3.97	42.40	Inch
				11.1	8.3	6.3	6.5	6.0	5.8	8.0	8.9	9.0	10.6	10.1	9.4	100.0	%
"	* Grassholme Reservoir.	936	NY(35)946224	4.62	3.53	2.76	2.62	2.46	2.21	3.29	3.53	3.58	4.24	4.19	3.94	40.97	Inch
				11.3	8.6	6.8	6.4	6.0	5.4	8.0	8.6	8.7	10.4	10.2	9.6	100.0	%
"	* Blackton Reservoir.	937	NY(35)930182	4.92	3.71	2.99	2.92	2.67	2.36	3.33	3.77	3.85	4.61	4.49	4.20	43.82	Inch
				11.2	8.5	6.8	6.7	6.1	5.4	7.6	8.6	8.8	10.5	10.2	9.6	100.0	%
"	Baldersdale, Hury Reservoir.	856	NY(35)966192	3.92	3.15	2.34	2.48	2.35	2.05	3.07	3.36	3.28	3.87	3.76	3.51	37.15	Inch
				10.6	8.5	6.3	6.7	6.3	5.5	8.3	9.0	8.8	10.4	10.1	9.5	100.0	%

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TABLE I. Wear and Tees continued.

County	Station	Alt. Ft.	NGR	Jan	Feb	Mar	Apr	May	June	Jly	Aug	Sep	Oct	Nov	Dec	Year	
Durham	Barnard Castle, Bowes Museum.	500	NZ(45)055166	3.29	2.51	2.13	2.16	2.20	1.74	2.67	2.95	2.66	3.09	3.19	2.92	31.51	Inch
				10.4	8.0	6.8	6.8	7.0	5.5	8.5	9.4	8.4	9.8	10.1	9.3	100.0	%
"	Hurworth Burn Reservoir.	357	NZ(45)409333	2.34	1.79	1.58	1.66	1.86	1.80	2.63	2.72	2.26	2.50	2.61	2.22	25.97	Inch
				9.0	6.9	6.1	6.4	7.2	6.9	10.1	10.5	8.7	9.6	10.1	8.5	100.0	%
"	Darlington, South Park.	150	NZ(45)285135	2.41	1.81	1.60	1.61	1.97	1.89	2.75	2.80	2.25	2.33	2.28	2.13	25.83	Inch
				9.3	7.0	6.2	6.2	7.6	7.3	10.7	10.9	8.7	9.0	8.8	8.3	100.0	%
Yorkshire	Kildale Hall	600	NZ(45)611095	3.29	2.53	2.37	2.55	2.58	2.63	3.78	3.54	2.95	3.34	3.85	3.21	36.62	Inch
				9.0	6.9	6.5	7.0	7.0	7.2	10.3	9.7	8.0	9.1	10.5	8.8	100.0	%
"	Crathorne Hall	185	NZ(45)444087	2.22	1.67	1.46	1.71	1.90	1.93	2.72	2.73	2.20	2.45	2.46	2.12	25.57	Inch
				8.7	6.5	5.7	6.7	7.4	7.6	10.6	10.7	8.6	9.6	9.6	8.3	100.0	%
Durham	Stockton on Tees, Ropner Park.	61	NZ(45)434182	3.29	2.51	2.13	2.16	2.20	1.74	2.67	2.95	2.66	3.09	3.19	2.92	31.51	Inch
				10.4	8.0	6.8	6.8	7.0	5.5	8.5	9.4	8.4	9.8	10.1	9.3	100.0	%
Yorkshire	* Middlesbrough, Albert Park.	30	NZ(45)494191	2.14	1.58	1.46	1.51	1.70	1.76	2.71	2.74	2.02	2.37	2.40	1.95	24.34	Inch
				8.8	6.5	6.0	6.2	7.0	7.2	11.1	11.3	8.3	9.7	9.9	8.0	100.0	%
"	Lockwood Reservoir.	632	NZ(45)668141	3.01	2.48	2.14	2.16	2.42	2.44	3.42	3.54	2.83	3.17	3.54	2.97	34.12	Inch
				8.8	7.3	6.3	6.3	7.1	7.1	10.0	10.4	8.3	9.3	10.4	8.7	100.0	%

TABLE II Estimated Annual Averages of Rainfall 1916-1950 for short period stations.
(Northumberland and Tyneside River Board Area)

County	Station	Annual Average in.	Alt. ft.	N.G.R.
Northumberland	Linhope	40.67	740	NT(36)963160
"	Mindrum	28.30	250	NT(36)842327
"	Pallins Burn	24.62	135	NT(36)911382
"	Berwick-On-Tweed	23.29	76	NU(46)002528
"	Newlands	25.88	160	NU(46)116324
"	Newton House	27.18	75	NU(48)235253
"	Stamford	27.80	175	NU(46)223193
"	Callaly Castle	31.95	350	NU(46)051099
"	Uswayford	43.08	1230	NT(36)887145
"	Rothbury	34.54	300	NU(46)055013
"	Amble	25.48	12	NU(46)267043
"	Acklington	26.27	138	NU(46)225000
"	Kirkwhelpington	33.91	581	NY(35)997844
"	Harwood	36.85	770	NZ(45)000903
"	Maiden Hall	30.48	277	NZ(45)138886
"	Tynemouth	26.56	95	NZ(45)374694
"	Kielder Castle	48.05	660	NY(35)632935
"	Whickhope	47.63	550	NY(35)682861
"	Bellingham	34.74	849	NY(35)808911
"	Bower	38.16	500	NY(35)757832
"	Black Clough	47.86	950	NT(36)706052
"	Game Park	49.34	900	NT(36)705044
"	Countess Crag	55.31	1600	NT(36)715029
"	Chattlehope	48.68	1100	NT(36)734025
"	Parkend	32.22	300	NY(35)872758
"	Colt Crag	31.85	655	NY(35)942781
"	Barrasford	29.28	207	NY(35)922729
"	Fawcett	29.04	537	NY(35)968767
"	Ryal Cottage	27.95	463	NY(35)994741
"	Allenheads	49.28	1350	NY(35)860452
"	Haydon Bridge	29.06	270	NY(35)844639
"	Hexham	27.71	325	NY(35)932632
"	Widehaugh Nursery	26.45	100	NY(35)964642
"	Throckley Filters	28.70	300	NZ(45)152669
"	Quick Cleugh	44.96	1380	NY(35)889479
"	Heatheryburn	43.04	1250	NY(35)905492
Durham	Nookton Burn	43.70	1360	NY(35)908464
"	Little Nookton	42.03	1290	NY(35)931465
"	Crosshill	37.60	1160	NY(35)941483
"	Boltshope	39.45	1250	NY(35)948468
Northumberland	Birkside	34.47	1090	NY(35)949507
"	Penny Pie	34.19	1270	NY(35)951522
Durham	Buckshott	35.02	960	NY(35)973498
Northumberland	Cowbyers	34.49	1060	NY(35)972515
Durham	Ruffside	32.36	730	NY(35)989518
Northumberland	Acton Burn	32.75	850	NY(35)978537
Durham	Ridding	30.65	680	NZ(45)103521
"	Belmount	36.99	1260	NY(35)973476
"	Edmondbyers Common	40.93	1540	NY(35)970459
"	Feldon Burn	36.19	1230	NY(35)999461
"	Harehope Burn	35.11	970	NZ(45)011482
"	Edmondbyers Farm	33.29	850	NZ(45)016502
"	Muggleswick	31.50	700	NZ(45)046500
"	Hisehope	35.42	1450	NZ(45)024461
"	Smiddy Shaw	35.39	1128	NZ(45)039462
"	Westwood S. Wks.	30.15	255	NZ(45)095548
"	Chopwellwood	29.11	446	NZ(45)136580
"	Gateshead	27.60	509	NZ(45)268604
Northumberland	Moorhouses Reservoir	26.79	195	NZ(45)334697
Durham	South Shields, South Pier	25.60	17	NZ(45)373678
"	South Shields, Bents Park	26.57	36	NZ(45)374672

TABLE II Estimated Annual Averages of Rainfall 1916-50
for short period stations.
(Wear and Tees River Board Area)

County	Station	Annual Average (in.)	Alt. ft.	N.G.R.
Durham	Wellheads Hush	56.85	1690	NY(35)826404
"	Grass Meres	59.71	1850	NY(35)825372
"	Burnhope Reservoir	54.75	1160	NY(35)850391
"	Parson Byers Quarry	33.11	860	NY(35)997376
"	Waskerley No. 3	36.62	1429	NZ(45)004433
"	Waskerley	35.57	1179	NZ(45)022444
"	Waskerley No. 6	35.44	1229	NZ(45)042430
"	Lanchester, Craigmore	29.66	400	NZ(45)166471
"	Houghall	27.86	160	NZ(45)277405
"	South Moor	27.77	616	NZ(45)190516
"	Washington, Glebe School	26.11	160	NZ(45)314561
"	Sunderland, Thorneholme	25.26	130	NZ(45)392561
"	Ryhope Pumping Station	25.93	228	NZ(45)404524
"	Mill Hill Reservoir	27.72	521	NZ(45)413427
"	New Winning Pumping Station	29.24	420	NZ(45)407383
"	West Hartlepool Water Works	23.99	36	NZ(45)509334
"	West Hartlepool	24.53	30	NZ(45)510327
Westmorland	Moorhouse	81.18	1840	NY(35)758328
"	Bog Hill Weir	79.16	1700	NY(35)773327
"	Sike Hill	79.38	1840	NY(35)772321
Durham	Forest-In-Teesdale	54.85	1250	NY(35)872295
"	Newbiggin	45.01	1000	NY(35)915276
Westmorland	Connypot	60.47	1840	NY(35)815202
North Riding	Dow Crag	60.94	1720	NY(35)838192
"	Keekham	67.50	1660	NY(35)832222
"	Lunehead	60.15	1450	NY(35)850215
"	Hargill	57.32	1320	NY(35)880223
"	Aygill	49.74	1250	NY(35)886169
"	Balderhead	50.64	1360	NY(35)886178
"	Hury Reservoir	37.98	862	NY(35)967192
"	Lartington Filters	32.83	735	NZ(45)012180
Durham	Eggleston	34.56	1000	NZ(45)022830
"	Raby Castle	30.26	450	NZ(45)128222
"	Darlington, Broken Scar	26.32	158	NZ(45)256141
"	Darlington, Waterworks	25.23	161	NZ(45)258139
"	Shildon S. Wks.	25.36	384	NZ(45)242254
"	Fighting Cocks Reservoir	25.64	171	NZ(45)342138
North Riding	Great Smeaton	25.78	208	NZ(45)346046
"	Worsall Hall	25.11	60	NZ(45)394101
Durham	Middleton St. George	23.00	114	NZ(45)376132
North Riding	Pinchinthorpe House	28.92	340	NZ(45)580149
Durham	Long Newton Reservoir	25.64	184	NZ(45)362164
"	Billingham	23.65	35	NZ(45)461224
North Riding	Munthorpe	27.11	287	NZ(45)538149
"	South Bank	23.94	41	NZ(45)543198
Durham	Crookfoot Reservoir	24.87	293	NZ(45)431309
North Riding	Guisborough Grammar School	28.42	330	NZ(45)616161
"	Guisborough Waterworks	30.84	600	NZ(45)638155
"	North Skelton	29.34	304	NZ(45)675182

TABLE III. Monthly Averages of Rainfall, 1916-1950, estimated for short period stations (in inches)

Northumberland and Tyneside, Wear and Tees River Board Areas.

County	Station	Jan	Feb	Mar	Apr	May	June	Jly	Aug	Sep	Oct	Nov	Dec	Year
Northumberland	Berwick-on-Tweed	2.03	1.49	1.51	1.35	1.75	1.68	2.42	2.70	2.00	2.42	2.24	1.70	23.29
"	Tynemouth	2.34	1.65	1.54	1.62	1.99	1.75	2.97	3.03	2.31	2.47	2.50	2.39	26.56
"	Kielder Castle	5.38	3.56	3.12	2.98	2.98	2.98	4.23	4.66	4.37	4.95	4.47	4.37	48.05
"	Billingham	3.65	2.57	2.19	2.15	2.26	2.19	3.27	3.44	3.23	3.47	3.33	2.99	34.74
Durham	Chopwellwood	2.59	1.98	1.83	1.86	2.15	2.04	3.06	3.06	2.47	2.77	2.77	2.53	29.11
"	Houghall	2.51	1.87	1.70	1.78	2.12	1.92	2.92	2.90	2.45	2.62	2.67	2.40	27.86
Yorkshire	Redcar	2.11	1.56	1.36	1.44	1.82	1.75	2.46	2.58	2.06	2.27	2.51	2.01	23.93

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Table IVa 35-year daily totals of rainfall (in inches)

Morpeth (Cockle Park)

Day	Jan	Feb	Mar	Apr	May	June	Jly	Aug	Sept	Oct	Nov	Dec
1	4.81	2.17	3.33	1.78	1.99	4.12	2.67	4.78	5.15	2.13	3.39	1.39
2	1.98	3.34	1.56	5.54	0.96	2.48	2.02	2.76	3.81	2.23	4.14	2.75
3	2.99	2.57	2.22	2.14	1.37	2.51	3.65	1.28	3.72	2.94	3.42	2.06
4	3.55	2.28	1.69	1.97	3.08	1.56	3.72	3.33	2.85	3.53	2.60	3.94
5	1.30	1.98	2.50	1.29	4.20	2.56	4.86	4.19	1.87	3.04	3.43	3.10
6	3.03	2.20	1.09	0.87	2.83	2.13	4.33	5.38	2.16	2.28	2.79	2.38
7	4.32	2.20	2.35	1.37	2.14	2.30	3.12	2.48	2.04	3.37	2.06	2.18
8	2.79	1.63	1.52	1.49	3.05	2.32	2.53	5.58	1.50	3.30	2.29	3.41
9	3.09	1.90	2.55	3.58	1.64	2.06	3.07	1.48	2.56	4.00	3.93	2.89
10	4.84	2.72	2.54	2.72	1.21	1.45	4.11	2.53	1.73	1.84	3.21	1.58
11	2.83	2.24	3.41	2.57	1.93	0.82	1.34	3.88	1.29	2.49	4.75	3.87
12	3.38	2.61	4.23	2.00	2.49	1.82	2.20	6.42	3.03	2.70	2.33	2.11
13	2.97	1.42	1.93	1.76	2.91	3.56	5.14	2.97	3.87	2.09	1.73	3.22
14	3.44	1.82	1.36	2.13	1.48	3.83	3.06	2.01	2.99	0.67	2.27	4.06
15	3.24	2.40	1.02	1.84	2.10	2.52	2.83	3.48	3.43	1.57	2.59	3.22
16	3.00	1.31	3.06	1.40	2.41	2.04	3.35	2.57	4.22	1.61	4.40	4.83
17	2.80	2.02	1.23	2.26	4.27	0.73	3.24	4.18	2.69	2.84	6.01	2.41
18	4.25	1.79	1.55	1.26	1.98	2.11	3.62	1.75	1.96	1.78	6.19	2.28
19	1.90	4.12	2.23	2.24	2.19	1.47	2.92	2.01	4.87	2.11	4.36	1.38
20	3.05	2.03	1.90	1.84	3.09	1.08	3.28	4.14	3.81	1.60	3.02	2.62
21	3.22	1.41	1.60	3.07	2.02	2.26	1.68	4.05	3.18	4.68	3.00	2.76
22	2.15	2.57	2.00	1.88	1.79	2.55	3.08	2.61	2.90	4.57	3.11	2.13
23	1.97	1.35	0.99	2.64	2.04	2.20	3.70	2.33	1.61	4.92	3.42	1.65
24	2.79	2.64	1.75	2.49	3.84	1.41	1.89	3.35	3.59	3.70	1.41	1.85
25	2.57	3.11	2.48	3.52	2.80	1.24	3.00	2.96	2.78	4.99	2.42	4.53
26	2.92	3.48	1.54	3.22	3.16	1.57	5.18	3.38	2.89	3.06	2.57	3.06
27	2.71	2.78	3.09	2.66	1.98	2.65	4.74	3.58	1.43	4.08	3.32	2.11
28	2.88	2.94	1.41	1.61	2.45	0.82	4.07	5.28	2.76	4.12	2.94	2.88
29	5.99	1.23	2.48	2.98	2.37	2.21	4.21	6.73	1.37	5.05	1.68	4.44
30	3.22	–	1.02	1.24	1.82	2.30	2.38	2.68	3.62	4.39	2.56	3.87
31	4.15	–	2.03	–	5.30	–	2.04	1.43	–	2.39	–	2.84

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Table JVa (cont.) 35-year daily totals of rainfall (in inches)

Durham Observatory.

Day	Jan	Feb	Mar	Apr	May	June	Jly	Aug	Sept	Oct	Nov	Dec
1	4.45	2.00	2.80	2.01	1.25	3.23	2.69	2.58	4.89	2.07	3.59	1.56
2	1.96	2.48	1.39	3.70	1.01	2.79	1.95	3.82	4.37	2.00	3.60	2.81
3	2.98	2.69	1.67	2.36	1.22	3.73	4.57	0.80	5.81	2.80	3.44	1.81
4	3.52	1.86	1.29	1.79	2.24	1.77	3.05	2.66	1.98	2.87	2.10	4.50
5	1.15	1.77	1.82	2.07	3.01	1.24	3.89	4.10	1.48	2.44	3.16	2.61
6	2.15	1.63	1.10	1.22	2.98	1.94	3.34	5.25	2.03	1.97	1.58	2.06
7	2.87	2.05	1.95	1.10	1.79	2.45	2.47	2.07	2.05	1.60	2.93	2.40
8	2.41	1.29	1.66	2.00	1.85	2.66	1.92	5.37	1.83	2.75	1.67	2.99
9	4.24	2.24	2.02	2.36	1.12	1.81	3.34	2.02	1.30	4.32	3.36	3.32
10	3.27	2.73	2.26	2.11	1.40	1.75	2.48	2.24	2.01	2.13	3.12	1.96
11	3.09	2.24	3.09	1.53	2.71	1.18	2.73	3.14	1.39	1.60	3.90	3.77
12	3.38	2.02	3.12	1.55	1.62	2.32	2.13	3.28	2.36	3.02	2.43	1.66
13	2.17	1.46	1.36	1.66	3.06	3.35	4.39	1.76	3.23	1.85	2.41	2.39
14	3.06	1.10	0.94	1.80	1.91	3.75	2.16	3.26	2.12	1.11	3.47	3.58
15	3.15	1.92	1.92	1.97	2.04	1.78	3.75	4.15	2.25	1.53	3.06	3.46
16	2.24	1.58	2.30	1.41	2.01	1.76	3.88	2.42	3.90	1.12	3.54	3.27
17	1.70	2.05	1.91	1.36	2.46	1.88	3.11	2.19	2.52	2.59	5.15	1.89
18	3.10	2.52	1.17	2.45	2.61	2.85	2.70	1.55	2.97	1.33	5.60	2.06
19	1.90	2.30	2.70	1.55	1.35	1.41	2.56	1.80	4.37	1.79	3.47	1.77
20	1.37	2.03	1.75	1.63	2.90	0.76	4.31	4.88	3.98	1.98	3.08	2.40
21	2.39	1.53	1.55	2.85	1.90	2.09	2.84	4.72	5.20	4.54	2.19	1.95
22	1.59	2.39	2.25	1.27	2.26	2.48	3.91	1.57	1.70	3.56	3.08	1.77
23	1.15	1.07	1.11	2.15	2.37	2.01	3.37	1.97	1.47	3.42	2.33	2.25
24	2.09	2.47	1.57	2.00	3.44	1.03	1.79	3.43	4.18	4.38	1.96	1.93
25	2.55	2.87	2.31	1.66	1.81	1.85	2.88	2.15	3.23	4.29	2.31	2.50
26	3.08	3.83	1.68	2.74	3.17	1.35	5.11	2.62	2.39	3.17	2.41	2.92
27	1.79	2.74	2.46	2.24	2.14	2.53	3.83	5.22	1.80	3.42	2.80	1.55
28	2.70	2.56	2.01	1.84	3.11	1.65	3.31	4.91	1.85	3.95	1.89	2.89
29	3.94	1.51	1.99	2.52	2.73	1.68	3.18	7.12	1.32	5.43	1.19	3.93
30	1.93	-	0.49	1.39	2.75	2.18	2.12	1.83	2.96	3.44	2.08	3.72
31	3.55	-	1.84	-	4.47	-	2.08	1.44	-	2.11	-	2.41

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Table IVa contd. 35-year daily totals of rainfall (in inches)

Hury Reservoir.

Day	Jan.	Feb	Mar	Apr	May	June	Jly	Aug	Sept	Oct	Nov	Dec
1	6.53	4.85	2.59	4.16	1.44	3.44	3.00	3.65	4.92	2.27	5.56	3.79
2	4.99	5.15	1.67	4.64	2.86	2.83	2.00	4.08	4.96	3.68	5.43	5.13
3	4.29	5.77	2.19	2.99	2.37	2.77	3.13	1.24	5.79	4.35	4.74	3.82
4	4.73	4.05	2.95	2.69	3.07	1.58	5.01	2.85	2.23	5.17	5.02	5.96
5	3.14	4.46	4.20	3.50	3.84	2.32	3.92	5.59	2.15	3.98	4.61	5.45
6	5.65	3.38	2.24	1.61	4.02	1.90	3.89	4.21	2.88	3.35	2.80	3.39
7	4.57	3.91	3.20	3.01	2.08	2.55	2.96	3.02	2.78	3.96	3.67	4.13
8	5.10	3.46	2.54	3.01	2.81	2.23	2.21	4.59	2.71	5.39	2.66	3.00
9	6.48	6.40	2.04	4.08	1.15	2.55	2.65	3.41	2.81	7.97	5.00	3.41
10	5.55	5.59	2.49	3.44	1.98	2.30	2.05	2.51	3.29	4.05	4.30	2.97
11	4.97	4.38	2.89	3.48	2.63	0.86	2.34	2.89	1.86	3.18	5.62	3.37
12	5.71	4.64	3.78	2.97	2.59	1.79	2.24	3.42	3.78	4.10	5.22	2.23
13	3.50	2.26	1.62	2.99	2.78	3.91	4.93	2.80	4.63	3.85	4.26	4.29
14	4.33	3.14	1.19	3.75	1.91	4.65	3.56	3.29	4.76	2.32	5.37	3.43
15	4.22	6.16	2.24	3.09	2.38	1.47	4.85	3.29	4.71	2.80	4.05	4.08
16	3.93	3.50	3.57	2.42	3.34	1.71	4.43	3.62	5.81	2.15	4.13	3.05
17	4.34	1.93	3.08	2.51	2.20	1.69	3.72	3.51	4.86	4.50	4.37	2.41
18	5.04	2.04	2.32	1.35	2.87	2.67	3.84	2.72	2.79	2.97	5.35	3.14
19	3.30	3.04	3.96	2.38	1.85	1.43	2.59	3.02	7.86	2.91	5.06	1.94
20	3.75	3.07	2.00	1.63	3.00	2.21	4.33	8.15	5.51	3.25	3.98	4.18
21	3.78	2.56	2.17	2.96	1.49	2.77	2.57	5.10	7.53	5.64	4.63	4.78
22	2.72	5.27	2.34	1.94	2.64	2.14	3.93	2.81	3.65	3.90	4.54	3.68
23	2.55	1.33	2.12	4.13	2.66	1.51	2.86	2.97	2.04	5.02	4.90	2.54
24	4.70	2.91	1.68	3.07	3.18	2.38	2.16	3.58	4.31	7.74	5.04	2.60
25	3.58	3.74	2.71	2.99	2.32	1.72	4.31	4.60	3.82	6.55	3.55	4.94
26	3.21	5.49	2.09	2.59	3.80	1.80	5.07	3.27	2.35	5.19	3.34	4.43
27	3.26	3.70	2.15	2.09	1.66	3.77	4.08	3.62	1.98	5.51	3.04	4.51
28	3.99	2.57	2.60	2.23	2.65	2.95	3.78	5.40	2.34	3.70	2.55	6.95
29	3.93	0.69	3.86	2.18	2.76	2.58	4.51	7.89	1.20	5.88	1.92	6.96
30	3.52	–	3.05	2.13	2.63	2.48	3.23	2.71	3.68	5.14	5.01	5.18
31	6.63	–	3.48	–	4.00	–	2.22	2.16	–	3.83	–	3.54

Table IVa contd. 35-year daily totals of rainfall (in inches)

Guisbrough, Lockwood Reservoir

Day	Jan	Feb	Mar	Apr	May	June	Jly	Aug	Sept.	Oct	Nov	Dec
1	4.96	2.09	1.97	2.58	1.76	3.26	2.10	3.50	3.23	1.92	4.98	1.93
2	2.31	2.95	2.10	4.02	2.43	5.12	1.13	4.40	4.91	2.05	5.02	3.39
3	3.69	3.89	2.12	2.31	1.21	5.27	1.75	1.43	4.04	2.95	3.62	2.51
4	4.86	3.11	1.79	3.50	2.25	2.00	3.61	2.47	6.88	4.59	3.58	4.44
5	2.38	1.77	2.45	2.25	3.32	1.56	4.48	6.09	2.42	3.34	4.43	3.93
6	2.04	2.36	1.59	2.20	2.70	2.04	3.98	6.64	2.40	3.05	3.11	2.75
7	5.09	2.48	2.58	1.39	2.38	3.22	3.04	2.32	4.07	2.55	5.30	2.67
8	3.57	2.18	2.37	2.30	3.34	2.19	2.93	5.24	2.62	3.07	2.11	2.82
9	4.46	2.62	3.54	3.29	1.61	1.65	2.16	3.83	4.28	4.14	4.89	5.44
10	4.51	3.33	3.01	2.36	1.75	2.90	5.75	5.89	2.26	3.22	5.85	1.83
11	3.96	3.16	1.72	2.51	2.72	1.43	3.55	4.36	1.82	3.00	5.06	4.27
12	5.64	2.86	3.82	1.75	2.26	3.36	1.97	3.62	3.39	2.83	3.14	1.99
13	2.28	2.06	2.32	2.22	3.78	4.35	2.95	2.44	3.55	3.75	3.75	3.16
14	3.66	1.75	2.20	2.54	2.18	7.69	3.67	2.65	3.20	1.43	4.89	5.03
15	3.82	1.91	2.75	1.82	2.44	2.67	4.26	3.41	2.99	1.16	5.62	4.54
16	2.94	3.27	2.62	3.57	3.82	2.26	6.16	2.53	3.46	1.45	3.70	4.52
17	2.22	2.15	3.26	2.57	2.48	1.37	7.00	4.01	2.70	3.89	5.04	2.80
18	4.18	3.34	1.21	3.55	2.94	3.81	4.65	3.19	2.72	2.17	6.65	3.00
19	2.34	3.81	2.48	3.91	1.43	3.27	2.37	2.93	3.28	2.82	4.01	2.41
20	2.16	4.08	2.48	2.39	2.36	1.64	5.53	8.88	5.02	3.21	4.87	2.39
21	1.98	2.55	1.82	0.91	3.53	2.25	5.01	6.07	4.49	4.20	4.56	5.09
22	2.12	4.04	2.25	1.11	4.38	2.88	8.88	2.58	2.89	4.22	2.63	3.27
23	2.70	1.20	1.58	2.72	3.96	2.46	3.91	2.01	3.28	4.11	3.91	3.46
24	3.43	4.34	1.83	2.73	3.35	1.86	4.18	5.87	5.16	5.91	3.34	2.60
25	2.20	2.95	2.50	2.36	2.71	2.08	3.16	2.12	4.84	5.96	2.71	2.88
26	3.36	5.92	1.62	2.54	2.73	1.72	4.63	3.16	3.10	5.91	4.08	3.11
27	2.55	4.31	2.47	4.22	2.80	4.29	3.34	3.63	1.81	5.00	3.52	2.56
28	3.67	5.22	2.69	1.62	3.73	1.38	3.21	6.30	2.25	4.76	3.88	2.75
29	5.27	1.23	2.95	2.18	3.61	2.67	4.79	7.59	1.74	6.56	2.68	3.45
30	2.05	-	1.16	2.12	2.76	2.62	3.25	1.55	2.28	4.17	2.82	4.98
31	3.81	-	2.68	-	1.95	-	2.26	3.29	-	2.67	-	4.31

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Table IVb Rainfall totals in inches, divided by 35, thus giving 35-year means ranging from 'trace' to .70 in., for use with table IVa.

Totals in inches x	35 yr means $x/35$	Totals in inches x	35 yr means $x/35$
– .17	'trace'	12.43 – 12.77	.36
.18 – .52	.01	12.78 – 13.12	.37
.53 – .87	.02	13.13 – 13.47	.38
.88 – 1.22	.03	13.48 – 13.82	.39
1.23 – 1.57	.04	13.83 – 14.17	.40
1.58 – 1.92	.05	14.18 – 14.52	.41
1.93 – 2.27	.06	14.53 – 14.87	.42
2.28 – 2.62	.07	14.88 – 15.22	.43
2.63 – 2.97	.08	15.23 – 15.57	.44
2.98 – 3.32	.09	15.58 – 15.92	.45
3.33 – 3.67	.10	15.93 – 16.27	.46
3.68 – 4.02	.11	16.28 – 16.62	.47
4.03 – 4.37	.12	16.63 – 16.97	.48
4.38 – 4.72	.13	16.98 – 17.32	.49
4.73 – 5.07	.14	17.33 – 17.67	.50
5.08 – 5.42	.15	17.68 – 18.02	.51
5.43 – 5.77	.16	18.03 – 18.37	.52
5.78 – 6.12	.17	18.38 – 18.72	.53
6.13 – 6.47	.18	18.73 – 19.07	.54
6.48 – 6.82	.19	19.08 – 19.42	.55
6.83 – 7.17	.20	19.43 – 19.77	.56
7.18 – 7.52	.21	19.78 – 20.12	.57
7.53 – 7.87	.22	20.13 – 20.47	.58
7.88 – 8.22	.23	20.48 – 20.82	.59
8.23 – 8.57	.24	20.83 – 21.17	.60
8.58 – 8.92	.25	21.18 – 21.52	.61
8.93 – 9.27	.26	21.53 – 21.87	.62
9.28 – 9.62	.27	21.88 – 22.22	.63
9.63 – 9.97	.28	22.23 – 22.57	.64
9.98 – 10.32	.29	22.58 – 22.92	.65
10.33 – 10.67	.30	22.93 – 23.27	.66
10.68 – 11.02	.31	23.28 – 23.62	.67
11.03 – 11.37	.32	23.63 – 23.97	.68
11.38 – 11.72	.33	23.98 – 24.32	.69
11.73 – 12.07	.34	24.33 – 24.67	.70
12.08 – 12.42	.35		

Table V. MORPETH, COCKLE PARK

Frequencies of Daily Rainfall Amounts 1916-1950

Inches	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	All months
5.0													
4.5													
4.0													
3.5													
3.0					1								1
2.5					1								1
2.4		1			1		1						3
2.3		1			1		1						3
2.2		1			1		1		1				4
2.1		1			1		1		1				4
2.0		1			1	1	1	1	1				6
1.9		1			1	1	1	1	1				6
1.8		1			1	1	1	2	1				7
1.7		1			1	1	1	4	1				9
1.6		1			1	1	2	4	1				10
1.5		1		1	1	1	3	5	1	1			14
1.4		1		1	1	2	6	5	1	4			21
1.3	2	1	1	3	2	2	6	8	2	5		1	33
1.2	2	1	1	3	2	3	8	8	2	7		1	35
1.1	3	1	2	3	3	3	9	8	4	8	2	1	46
1.0	5	1	2	4	4	4	11	10	7	9	6	2	65
0.9	9	1	2	5	5	8	14	13	13	11	7	2	88
0.8	10	3	4	6	6	11	19	17	18	14	9	5	122
0.7	16	7	10	8	10	14	29	28	24	22	19	13	200
0.6	24	11	13	12	17	21	35	38	31	27	27	21	277
0.5	35	17	23	23	28	25	51	58	40	38	39	36	413
0.4	63	30	34	41	42	33	75	75	62	56	62	53	626
0.3	105	50	48	66	74	53	108	101	92	81	97	86	961
0.2	163	98	102	111	130	96	159	168	124	142	165	145	1603
0.1	292	222	199	200	214	186	263	281	223	295	295	269	2939
0.005	649	554	543	536	535	457	536	565	548	620	640	643	6826
*0.004	436	435	542	514	550	593	549	520	502	465	410	442	5958
Total No: of days	1085	989	1085	1050	1085	1050	1085	1085	1050	1085	1050	1085	12784

* Including rainless days.

G.12271/JB/2/73/75.

Table V, contd.

DURHAM OBSERVATORY

Frequencies of Daily Rainfall Amounts, 1916–1950

Inches	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
5.0													
4.5													
4.0													
3.5													
3.0													
2.5					1								1
2.4					1								1
2.3					1								1
2.2					1				2				3
2.1					1				2				3
2.0		1			1				2				4
1.9		1			1	1		1	2				5
1.8		1			1	1		1	2				6
1.7		1			1	1	1	1	2				7
1.6		1			1	1	2	1	2				8
1.5		1			1	2	2	1	2	1	1		11
1.4		1			1	2	2	2	2	2	1		13
1.3	1	1			1	2	3	3	2	2	1		16
1.2	1	1			1	2	5	4	2	2	2		20
1.1	2	1			2	3	7	4	3	3	3		28
1.0	2	2		2	2	5	10	7	7	5	3	1	46
0.9	4	3	1	3	5	5	17	12	11	6	4	4	85
0.8	8	4	5	5	8	8	19	26	18	8	8	5	122
0.7	10	7	6	8	11	11	21	29	21	14	11	10	159
0.6	17	12	17	10	17	15	32	41	38	24	25	16	264
0.5	30	17	23	14	27	22	41	54	48	32	37	30	375
0.4	39	37	35	37	45	31	73	80	70	54	62	50	613
0.3	74	58	55	55	71	68	116	110	92	84	92	84	959
0.2	129	127	115	127	150	130	190	193	152	252	184	166	1959
0.1	238	332	319	332	355	302	369	378	325	474	434	422	4280
0.005	612	517	538	511	509	475	539	530	500	586	606	603	6526
*0.004	473	472	547	539	576	575	546	555	550	499	444	482	6258
Total No. of days	1085	989	1085	1050	1085	1050	1085	1085	1050	1085	1050	1085	12784

* Including rainless days.

G.12271/JB/2/63/75.

Table V contd.

HURY RESERVOIR

Frequencies of Daily Rainfall Amounts, 1916–1921

Inches	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	All months
5.0													
4.5													
4.0													
3.5													
3.0													
2.5													
2.4								2	1				3
2.3								2	1	1			4
2.2								2	2	1			5
2.1								2	2	1			5
2.0			1					2	3	1			7
1.9			1					2	3	1			7
1.8			1					2	4	1			8
1.7		1	1		1			2	5	1		1	12
1.6		2	1		1	1	2	3	5	1		1	17
1.5		3	1		2	1	4	3	6	1	1	1	23
1.4		3	1	1	2	1	4	4	6	1	1	3	27
1.3	2	3	1	1	2	1	6	6	8	3	2	3	38
1.2	3	5	1	1	2	1	6	8	9	4	2	6	48
1.1	6	7	1	3	2	1	10	11	13	5	3	8	70
1.0	8	7	2	4	2	2	11	12	14	9	6	9	86
0.9	13	15	5	5	2	5	14	18	17	14	13	14	135
0.8	16	17	8	8	7	7	18	25	24	27	18	18	193
0.7	26	25	12	11	11	9	22	30	34	36	27	25	268
0.6	34	36	20	19	15	14	32	38	43	44	42	36	373
0.5	57	53	26	31	24	22	50	53	57	54	65	49	541
0.4	90	77	40	46	44	44	74	80	81	102	99	74	851
0.3	162	115	67	78	75	68	109	124	116	155	146	124	1339
0.2	247	180	133	139	141	110	170	186	181	237	225	209	2148
0.1	414	314	257	281	258	230	292	302	281	372	375	364	3740
0.005	740	599	564	577	522	492	559	589	548	647	656	711	7204
* 0.004	345	390	521	473	563	558	526	496	502	438	394	374	5580
Total No. of days.	1085	989	1085	1050	1085	1050	1085	1085	1050	1085	1050	1085	12784

* Including rainless days.

G.12271/JB/2/63/75.

Table V contd.

LOCKWOOD RESERVOIR

Frequencies of Daily Rainfall Amounts, 1916-1950

Inches	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	All months
5.0													
4.5							1		1				2
4.0							1		1				2
3.5							1		1				2
3.0							2	1	1				4
2.5							3	2	1				6
2.4						1	3	2	1				7
2.3						1	3	2	1				7
2.2						1	3	2	1				7
2.1					1	2	3	3	1				10
2.0					1	2	4	3	1				11
1.9					1	2	4	6	1			1	15
1.8					1	2	5	6	1			1	16
1.7					1	2	6	6	1	1	1	1	19
1.6		1			1	2	6	7	1	1	2	1	22
1.5	1	2			2	3	8	7	2	1	2	1	29
1.4	1	3			2	3	9	8	3	1	2	1	33
1.3	3	3		1	2	4	10	11	4	3	3	1	45
1.2	4	4		1	2	5	10	12	6	6	4	1	55
1.1	5	4		2	3	8	15	14	8	7	7	1	74
1.0	6	6		3	6	9	18	17	13	11	10	5	104
0.9	9	11	3	4	9	11	22	23	19	15	13	7	146
0.8	10	17	5	6	12	14	27	32	23	20	19	9	194
0.7	17	20	13	7	16	19	29	39	29	24	27	14	254
0.6	19	27	22	15	23	28	40	44	36	33	35	21	343
0.5	37	34	28	24	33	35	60	63	41	49	59	34	497
0.4	60	45	44	40	48	50	80	88	63	73	81	55	727
0.3	113	76	72	72	85	80	110	121	99	112	133	103	1176
0.2	184	137	118	126	135	136	172	182	151	181	219	180	1924
0.1	329	257	239	236	256	238	293	307	255	322	350	329	3411
0.005	665	562	548	578	543	502	572	577	549	630	699	706	7131
* 0.004	420	427	537	472	542	548	513	508	501	455	351	379	5653
Total No. of days.	1085	989	1085	1050	1085	1050	1085	1085	1050	1085	1050	1085	12784

* Including rainless days.

G.12271/JB/2/63/75.

Table VI

Maximum and Minimum Monthly and Annual Totals of Rainfall, (in inches), 1916-1950, with supplementary list covering extremes for the 50-year period, 1911-1960.

		Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
COCKLE PARK														
1916-50	MAX	1948 9.09	1941 6.43	1947 4.88	1934 5.49	1924 6.12	1928 4.40	1940 5.93	1917 7.04	1944 5.75	1939 5.37	1950 5.41	1937 5.65	1937 35.25
	MIN	1944 0.85	1921 0.25	1929 0.30	1942 0.75	1922 0.48	1925 0.14	1935 0.50	1947 0.15	1941 0.57	1947 0.55	1942 0.63	1941 0.43	1949 20.06
OTHER - EXTREMES 1910-15 & 1951-60.	MAX						1911 5.29		1956 8.62		1960 7.02	1951 6.88	1915 5.84	1960 36.36
	MIN	1953 0.73		1953 0.22	1912 0.15	1959 0.36						1958 0.60		1953 19.81
DURHAM OBSERVATORY 1916-50	MAX	1948 7.41	1941 6.00	1947 3.85	1934 3.70	1932 4.10	1928 4.62	1930 7.24	1927 6.23	1935 5.32	1939 5.60	1950 5.55	1937 6.36	1930 34.87
	MIN	1949 0.57	1946 0.32	1929 0.17	1938 0.09	1922 0.53	1925 0.07	1935 0.27	1947 0.30	1941 0.51	1947 0.55	1942 0.66	1941 0.57	1949 18.68
OTHER - EXTREMES 1910-19 & 1951-60.	MAX										1960 6.79			
	MIN	1953 0.53		1953 0.05	1912 0.09	1959 0.52			1959 0.25	1910 0.37		1956 0.64		1959 17.32
HURY RESERVOIR 1916-50	MAX	1948 8.60	1950 6.70	1947 5.85	1947 6.09	1920 4.28	1931 4.76	1930 4.89	1917 7.22	1918 8.29	1938 8.08	1935 6.01	1921 7.57	1950 44.41
	MIN	1940 1.21	1921 0.18	1944 0.33	1938 0.56	1935 0.56	1921 0.38	1948 0.90	1947 0.19	1941 0.20	1946 0.88	1945 0.85	1933 0.80	1929 28.67
OTHER - EXTREMES 1910-19 & 1951-60.	MAX					1954 4.99	1912 5.63		1956 7.66			1951 8.80	1951 8.20	1954 46.22
	MIN	1953 0.99			1957 0.46	1959 0.37	1915 0.38	1911 0.50			1915 0.74	1958 0.85		1915 26.79
LOCKWOOD RESERVOIR 1916-50	MAX	1948 6.35	1941 7.77	1947 4.79	1931 4.08	1932 8.81	1948 7.04	1930 12.08	1927 8.05	1931 8.57	1919 6.99	1950 7.48	1937 5.49	1930 48.47
	MIN	1949 0.98	1947 0.65	1938 0.24	1938 0.44	1919 0.82	1921 0.56	1935 0.51	1947 0.37	1917 0.69	1947 0.60	1920 0.75	1941 0.61	1949 23.87
OTHER - EXTREMES 1951-60.	MAX								1954 10.43		1960 9.95		1914 6.37	
			1959 0.53		1912 0.19	1956 0.68	1915 0.49							

Table VII

Maximum Daily Rainfall (in inches) 1916-1950 with additional maxima for the 50-year period, 1911-1960.

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
COCKLE PARK													
MAX	1.33	2.45	1.37	1.54	2.84	2.06	2.44	2.04	2.27	1.50	1.13	1.32	
1916-50	1948	1941	1937	1917	1924	1928	1947	1934	1918	1949	1935	1917	
MAX			1.47			2.10					1.54		
1911-60			1951			1911					1951		
DURHAM													
MAX	1.29	1.97	0.90	0.88	1.14	1.90	1.76	1.90	2.20	1.47	1.55	1.07	
1916-50	1921	1941	1919	1944	1920	1928	1930	1948	1935	1945	1950	1922	
MAX			0.96		1.39						1.59	1.20	
1911-60			1951		1954						1951	1954	
HURY RESERVOIR													
MAX	1.33	1.78	1.07	1.42	1.79	1.67	1.68	2.44	2.46	2.37	1.50	1.71	
1916-50	1948	1933	1928	1947	1924	1928	1930	1928	1935	1941	1949	1916	
MAX	1.58												
1911-60	1954												
LOCKWOOD RESERVOIR													
MAX	1.56	1.66	0.97	1.30	2.11	2.45	4.46	2.76	4.38	1.77	1.70	1.92	
1916-50	1921	1934	1939	1947	1932	1948	1930	1944	1931	1924	1916	1922	
MAX	1.80		0.99			2.67				1.94			
1911-60	1960		1951			1914				1960			

G.12271/JB/2/63/75.

Appendix I

Intense falls of Rain in 2 hours or less, 1865-1960
Extracted from British Rainfall

(Arranged chronologically, in county order).

Year	Class	Station	Drainage area	Date	Amt. in.	D'r'n min.	Rate in/hr
Cumberland							
1918	N	Alston, Nenthead	5	Jly. 23	1.35	90	.90
Northumb.							
1873	N	Belford, Middleton Hall.	5	Sep. 24	1.72	120	.86
1898	R	Morpeth, Cockle Park	5	Sep. 7	2.01	120	1.01
1901	N	Angerton Hall	5	Jly. 19	1.00	30	2.00
1912	N	Haddon-on-the-Wall	3	Jly. 1	.97	35	1.66
"	N	" " " "	3	Jly. 1	1.21	57	1.27
"	R	Bamburgh	5	Jly. 12	1.75	60	1.75
1913	VR	Newcastle, Town Moor	3	Sep. 16	2.65	90	1.77
"	R	Gosforth, Woodbine Rd.	3	Sep. 16	2.53	120	1.27
1916	R	Hermshaugh, Wester Hall.	4	Jn. 24	1.88	60	1.88
1918	N	Alnwick Castle	5	May 22	1.14	60	1.14
1926	N	Ilderton, Lilburn Tower Gardens	6	Jn. 30	1.15	45	1.53
"	N	Howick Hall Gdns.	5	Sep. 20	1.40	120	.70
1930	R	Corbridge	3	Aug. 29	1.61	45	2.15
1931	N	Ilderton, Lilburn Tower Gardens	6	Jly. 9	1.28	60	1.28
1941	VR	Newcastle-upon-Tyne	3	Jn. 22	3.74	85	2.64
1950	N	Hexham Res.	3	Aug. 22	.82	30	1.64
1959	R	Ilderton, Lilburn Tower Gardens	6	Jly. 26	1.78	120	.89
Durham							
1864	N	Sunderland	2	Oct. 21	.70	13	3.25
1884	R	Barnard Cas., Whorlton	1	Jly. 6	2.01	60	2.01
1893	N	Sunderland	2	Jly. 2	.75	20	2.25
1895	N	Sunderland, W. Hendon House	2	Jly. 21	1.00	41	1.46
1912	N	Darlington, Cleveland Parade	1	Jly. 12	1.08	60	1.08
1917	N	Ushaw, St. Cuthbert's Coll.	2	Jn. 13	.55	6	5.50
1922	N	Stockton, Ropner Pk.	1	May 21	1.03	30	2.06
1925	N	Darlington, N. Villa	1	Aug. 23	.80	20	2.40
1926	N	S. Shields, Bents Pk.	3	Jn. 8	.86	35	1.47
1930	N	Eggleston Ho. Sch.	1	May 26	1.00	30	2.00
1934	N	Middleton-in-Teedsale, Newbiggin.	1	Oct. 27	.96	35	1.65
1935	R	Staindrop, Raby Cas.	1	Aug. 18	2.62	78	2.02
1936	N	S. Shields, Bents Pk.	3	Aug. 9	.75	25	1.80
1937	N	Sunderland, Mowbray Pk.	2	Jly. 3	1.18	60	1.18
1944	N	S. Shields, S. Pier Wks.	3	Jly. 10	1.47	90	.98
1949	R	Darlington W.W.	1	Aug. 22	1.80	50	2.16
1953	N	Rowlands Gill, Chopwellwood.	3	May 25	1.75	120	.87
Yorks. N.R.							
1869	N	Middlesbrough	6	Jly. 26	.66	15	2.64
1904	N	Gt. Ayton, Easby Hall	6	Jn. 23	1.32	80	.99
1914	N	Middlesbrough, Ormesby.	6	Jly. 2	.54	5	6.48

Year	Class	Station	Drainage area	Date	Amt. in.	D'r'n min.	Rate in/hr
1915	R	Middlesbrough, Dorman's Museum.	6	Jly. 23	1.84	75	1.47
1932	N	Kildale Hall	6	July 11	1.45	60	1.45

Key.

Drainage areas:-

Cumberland	5	South Tyne
Northumberland	2	South Tyne
	3	Lower Tyne
	4	North Tyne
	5	Croquet and Coast Streams
	6	Tweed, Till (included in Board's area)
Durham	1	Tees and coast streams
	2	Wear
	3	Lower Tyne
Yorkshire N.R.	6	Tees

N	Noteworthy
R	Remarkable
VR	Very Rare.